AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-11. (canceled)

12. currently amended) A modulator-integrated light source, comprising:

a feedback circuit which monitors an element temperature and which increases an offset voltage according to decreases in temperature and in which a semiconductor laser and an electroabsorption optical modulator are integrated on a high resistance semiconductor substrate,

wherein

said electroabsorption optical modulator is of a configuration that satisfies a condition:

$L \times B \geq 2000\ \mu m \cdot Gb/s$

where L is a length of said electroabsorption optical modulator and B is an operating frequency;

an absorption peak wavelength of said electroabsorption optical modulator is shorter than an oscillation wavelength of said semiconductor laser; and

the energy conversion value ΔX of a detuning amount, which is the difference between said oscillation wavelength and

said absorption peak wavelength at room temperature, satisfies a condition:

$$40 \text{ meV} \leq \Delta X \leq 100 \text{ meV}.$$

13. (previously presented) A modulator-integrated light source according to claim 12, wherein said prescribed bias voltage applied at a minimum operating temperature is 1 V or less.

14. (currently amended) A modulator-integrated light source according to claim 12,

wherein ~~said semiconductor laser and said electroabsorption optical modulator are integrated on a high-resistance semiconductor substrate;~~

said electroabsorption optical modulator has a pair of electrodes arranged on one surface of said high-resistance semiconductor substrate;

a prescribed bias voltage is applied to said electrodes;

said pair of electrodes are a P-type electrode and an N-type electrode; and

said P-type electrode is a traveling-wave electrode.

15. (previously presented) A modulator-integrated light source according to claim 14, wherein an active layer of said

electroabsorption optical modulator has an undoped layer and a thickness of said undoped layer gradually decreases with progression in a direction of progression of oscillation light from said semiconductor laser.

16. (previously presented) A modulator-integrated light source according to claim 12, wherein active layers of said semiconductor laser and said electroabsorption optical modulator are composed of layers buried by a semiconductor or a dielectric.

17. (previously presented) A modulator-integrated light source according to claim 16, wherein said buried layers are undoped layers.

18. (previously presented) A modulator-integrated light source according to claim 12, wherein quantum wells of an active layer of said semiconductor laser and quantum wells of an active layer of said electroabsorption optical modulator are joined by a butt joint.

19. (previously presented) A modulator-integrated light source according to claim 18, wherein the quantum wells of said electroabsorption optical modulator are of a structure wherein an energy level of a conductive band of wells is higher than an energy level of a conductive band of the barriers, and moreover,

an energy level of a valence band of the wells is higher than an energy level of a valence band of the barriers.

20. (previously presented) A modulator-integrated light source according to claim 12, wherein aluminum is contained in a composition of the active layer of said electroabsorption optical modulator.

21. (canceled)

22. (currently amended) A modulator-integrated light source, comprising:

a feedback circuit which monitors an element temperature and which increases an offset voltage according to decreases in temperature and in which a semiconductor laser and an electroabsorption optical modulator are integrated[[;]] on a high resistance semiconductor substrate,

wherein said electroabsorption optical modulator is of a configuration that satisfies a condition:

$L \times B \geq 2000\ \mu m \cdot Gb/s$

where L is a length of said electroabsorption optical modulator and B is an operating frequency;

an absorption peak wavelength of said electroabsorption optical modulator is shorter than an oscillation wavelength of said semiconductor laser; and

the energy conversion value ΔX of a detuning amount, which is the difference between said oscillation wavelength and said absorption peak wavelength at room temperature, satisfies a condition:

$40\ meV \leq \Delta X \leq 100\ meV$; and

said prescribed voltage applied at a minimum operating temperature is 1 V or less.

23. (previously presented) A modulator-integrated light source according to claim 12, wherein the modulator does not require a temperature control mechanism for keeping a temperature of the modulator uniform.

24. (previously presented) A modulator-integrated light source according to claim 13, wherein an amplifier is unnecessary.

25. (previously presented) A modulator-integrated light source according to claim 22, wherein an amplifier is unnecessary.

26. (previously presented) A modulator-integrated light source according to claim 12, wherein:

$2000\ \mu m \cdot Gb/s \leq L \times B \leq 80000\ \mu m \cdot Gb/s$.